

U.S. Department of Energy

National Transportation Program



DOE Shipping Activity



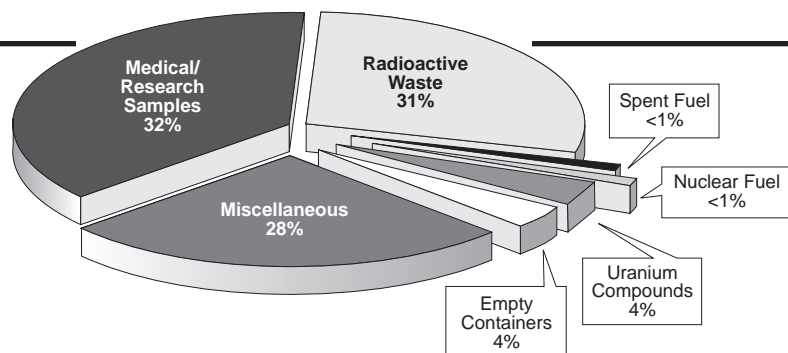
Highway transport accounts for 21 percent of the total number of DOE shipments. In FY 98, DOE shipped 148,113 tons of material by truck.

Transportation is an important part of many U.S. Department of Energy (DOE) programs. Most of these activities involve shipments of general commodities such as supplies, research equipment, and household goods. However, the transportation of some hazardous materials (including

radioactive materials) is necessary to support waste cleanup and environmental restoration; research and development of new energy technologies; production of radioisotopes for medical, research, and industrial uses; and National defense programs.

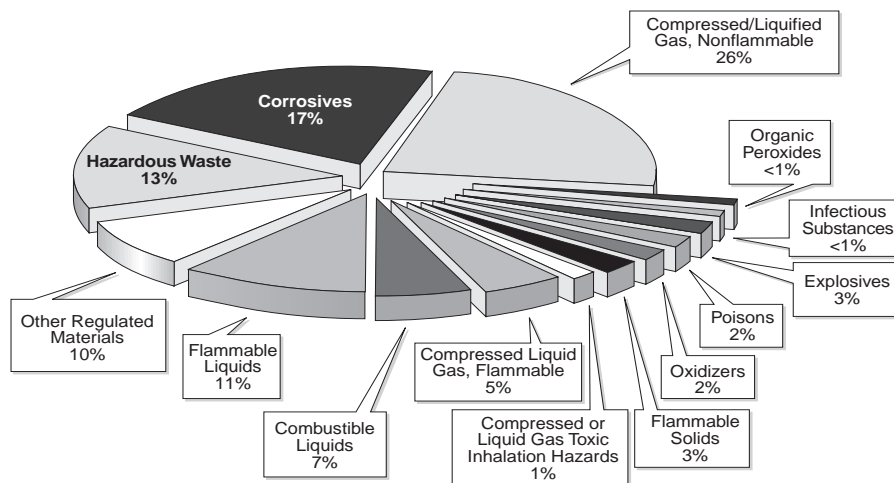
Information presented in this factsheet is based on data from most DOE transportation activities for Fiscal Year (FY) 1998 and should be considered representative of DOE's total shipping activity. This data is from a computer database that contains shipping information from DOE sites nationwide and supports transportation analyses, management activities, and special reports.

According to FY 98 data, DOE made a total of 424,026 offsite shipments (180,820 tons combined total weight). The number of DOE annual shipments is small compared to the 500 billion other shipments made each year in the United States. Hazardous materials shipments made up about 3.3 percent (13,700) of total DOE FY 98 shipments. Of the total DOE shipments, 1.2 percent (4,973) were radioactive materials and 2.1 percent (8,727) were shipments of nonradioactive hazardous materials, including hazardous wastes. DOE ships about 75 percent of the total curies shipped in the United States and anticipates the number of radioactive



RADIOACTIVE MATERIALS

Medical/research isotopes and radioactive waste make up almost two-thirds of DOE radioactive materials shipments.



NONRADIOACTIVE HAZARDOUS MATERIALS

The U.S. Department of Energy ships many types of hazardous materials.

Source: DOE transportation activities information for FY 98.

Note: When totaled, numbers in above pie charts exceed 100% because figures were rounded to nearest percentage point.

materials shipments to increase with the cleanup of its sites.

Nonhazardous Materials Make Up 96.7 Percent of All DOE Shipments

Examples of nonhazardous materials shipped by DOE include coal, documents, metal products, electronic and photographic equipment, machinery, paper products, furniture, rubber, plastic, and clothing.

Hazardous Materials Shipments

Hazardous materials are substances or materials capable of posing an unreasonable risk to health, safety, and property when transported in commerce.

Nonradioactive Hazardous Materials Make Up 2.1 Percent of All DOE Shipments

Examples of nonradioactive hazardous materials shipments include nonflammable gases, corrosives, flammable liquids, and explosives as reflected in the chart above.

Radioactive Materials Make Up 1.2 Percent of All DOE Shipments

Radioactive materials are one of seven categories of hazardous materials as defined by the U.S. Department of Transportation. For the purpose of this discussion, however, they are separated from nonradioactive hazardous materials. Medical and research isotopes are the most frequently shipped radioactive materials (32 percent).

Radioactive wastes resulting from DOE operations and environmental cleanup activities are the second most commonly shipped radioactive materials (31 percent) and are expected to increase substantially in the next few years. Uranium compounds are also shipped as part of site cleanup and as part of nuclear materials stewardship.

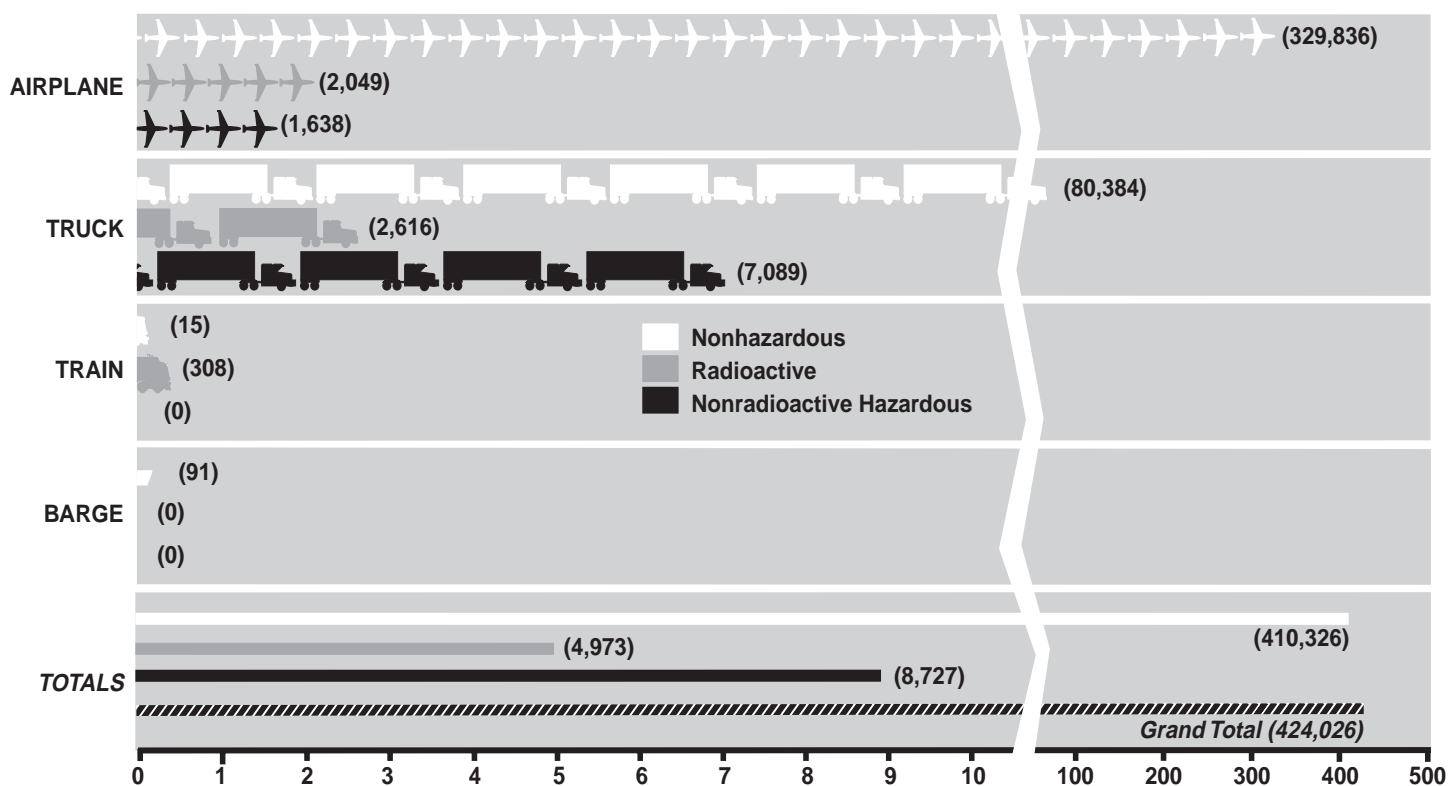
Used or "spent" nuclear fuel accounts for less than 1 percent of DOE radioactive materials shipments. These shipments consist of fuel from research reactors and from DOE reactors. Foreign reactors return spent fuel containing U.S.-origin nuclear material to DOE sites in Idaho and South Carolina. An average 35 spent fuel shipments are made per year.

DOE Uses All Transport Modes

DOE shipments are most commonly transported by airplanes, commercial trucks, and rail. About 79 percent of DOE shipments travel by air. Although this percentage of shipments is high, DOE only transported 3,811 tons of materials by airplane in FY 98, or 2.1 percent of the total weight shipped. Medical and research isotopes are the primary radioactive materials that DOE ships by air. These materials are very lightweight and must be delivered quickly because of their short half-lives.

In FY 98, DOE shipped 148,113 tons of materials by truck. Highway transport accounts for 21 percent of the total number of DOE shipments and 81.9 percent of total weight shipped.

Less than one-tenth of 1 percent (.08) of DOE shipments are made by rail. However, rail shipments accounted for 28,564 tons of materials in FY 98, or 15.8 percent of the total weight shipped. Coal, spent nuclear fuel, and low-level radioactive waste are examples of commodities DOE ships by rail.



Number of shipments by major mode (in thousands) in FY 98.
Source: DOE transportation activities information for FY 98.



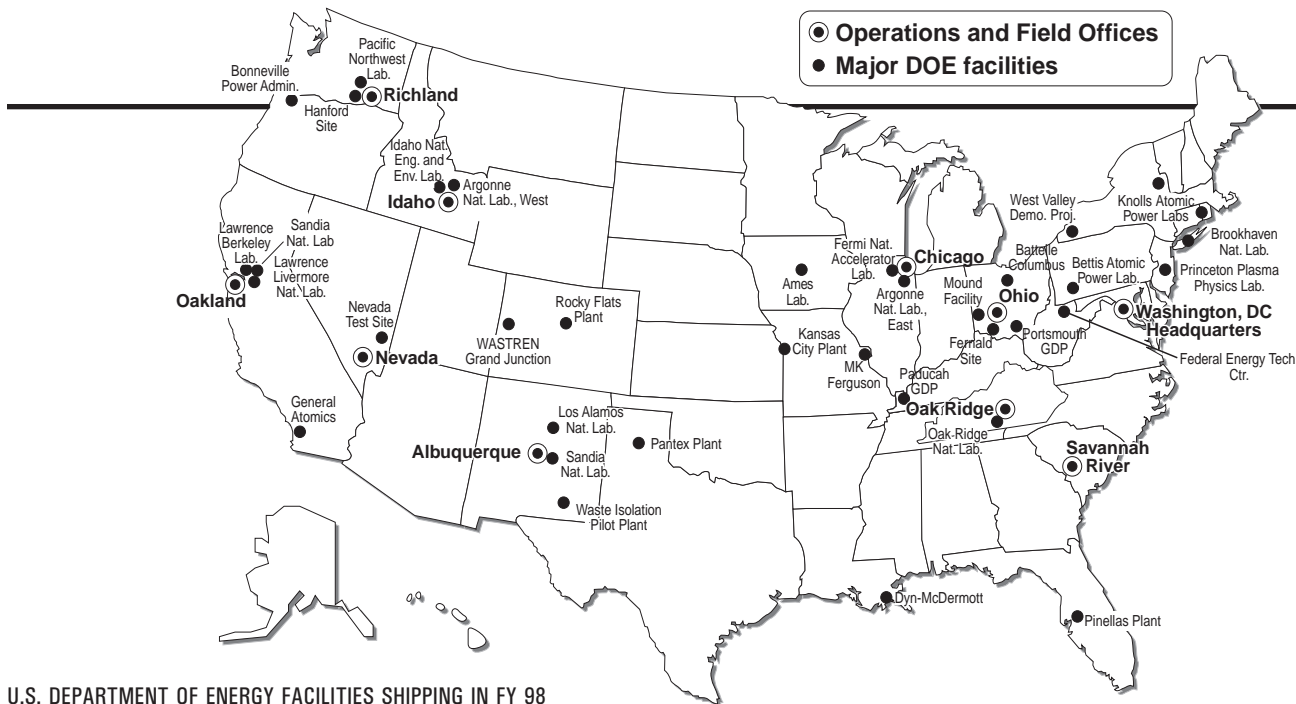
Occasionally, foreign research reactors return spent fuel containing nuclear material of U.S. origin to DOE sites. These shipments involve a combination of ship, truck, and rail transportation.

Water transport is generally slow and geographically limited when compared to other modes of transportation. In FY 98, DOE made 91 barge shipments of materials, totaling 332.7 tons. Radioactive materials typically transported by water (barge and ship) include spent nuclear fuel, uranium metal, uranium hexafluoride, and low-level waste.

DOE Materials Are Transported Worldwide

Shipments of radioactive materials travel between the United States and other countries, such as Canada, Japan, the United Kingdom, Italy, France, Germany, and Sweden under standards set by the International Atomic Energy Agency. These shipments contain isotopes for use in medicine, industry, and research.

In the United States, fresh nuclear fuel is transported to university research



U.S. DEPARTMENT OF ENERGY FACILITIES SHIPPING IN FY 98

Source: DOE transportation activities information for FY 98

reactors and DOE reactors. These reactors are used for research in nuclear physics and nuclear medicine, as well as for producing isotopes for industrial and other uses. Radioactive materials are also shipped to military sites in support of National defense. Hospitals receive radioactive materials for use in diagnosing and treating diseases.

Environmental cleanup at both present and former DOE sites results in the shipment of radioactive and other hazardous materials to storage and disposal sites. Sludges, soil, concrete, and other materials contaminated with hazardous chemicals are shipped to commercial storage or disposal sites. Waste contaminated with radioactive elements may be transported to

Government or commercial sites for storage or disposal.

DOE delivers isotopes to university, Government, and commercial research laboratories as well. There, they are used to conduct research in biology, chemistry, and ecology; develop new medicines; and research new energy resources. The resulting waste is then shipped by DOE to appropriate disposal facilities.

Power Administrations, such as the Western Area and Bonneville Power Administrations, operate programs involving production of electricity at nuclear power plants. Some of the commodities transported to these facilities include office supplies, heavy equipment, and power transformers.

Several DOE facilities are dependent upon large shipments of coal to fuel onsite power plants. DOE's Strategic Petroleum Reserve program periodically receives shipments of crude oil to maintain the Nation's oil stockpile in case foreign shipments are disrupted.

Summary

DOE ships many types of materials to support a variety of program activities. Like the multitude of businesses, universities, hospitals, and utilities that also depend on transportation of hazardous materials, DOE is subject to International, Federal, Tribal, State, and local regulations created for the protection of workers, the public, and the environment.

Additional information on DOE's National Transportation Program may be obtained from:

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Albuquerque Operations Office
P.O. Box 5400, MSC-5
Albuquerque, NM 87185-5400

Phone: 505-845-6134
Fax: 505-845-5508

Website:

<http://www.ntp.doe.gov/>

DOE Center for Environmental
Management Information
P.O. Box 23769
Washington, DC 20026-3769

1-800-7EM-DATA
1-800-736-3282

Website:

<http://www.em.doe.gov/>

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